AMENDMENT TO THE CLAIMS

1. (Currently amended) A method of treating a human patient suffering from ~~a neurodegenerative~~ Parkinson's disease, said method comprising the steps of:

(a) obtaining one or more embryonic stem cells;

(b) transfecting said stem cells with a nucleic acid encoding Nurr-1;

(c) culturing said stem cells of step (b) in order to become lineage-restricted to dopaminergic neurons; and

(d) engrafting into said patient the cells of step (c). ~~a population of recombinant cells comprising one or more cell fate-inducing genes that permit said cells to form neurons in said patient~~.

Claims 2-3: Canceled.

4. (Currently amended) The method of ~~claim 3~~ claim 1, wherein ~~step d)~~ step (c) comprises ~~inducing cell division using~~ culturing said cells in the presence of a growth factor.

Claims 5-15: Canceled.

16. (Currently amended) A method of treating a human patient suffering from ~~a neurological~~ Parkinson's disease, said method comprising:

engrafting into the patient a population of isolated embryonic stem cells as a suspension of 50 to [[5,000]] 50,000 cells per microliter in a pharmaceutically acceptable carrier, such that the cells form, in the patient, a population of cells in which at least 90% the cells are dopaminergic or serotonergic neurons.

17. (Currently amended) The method of claim 16, wherein ~~the~~ said population of

embryonic stem cells expresses a [[is]] recombinant~~, comprising one or more~~ cell fate-inducing gene selected from the group consisting of Nurr-1 and PTX-3. ~~genes that permit said cells to form neurons in said patient.~~

18. (Currently Amended) The method of claim 17, wherein ~~the~~ said cell fate-inducing gene is ~~genes are~~ expressed ~~from~~ under the control of a heterologous promoter.

19. (New) The method of claim 4, wherein said growth factor is fibroblast growth factor-8 (FGF-8).

20. (New) The method of claim 1, wherein step (c) comprises culturing said stem cells in the presence of sonic hedgehog (Shh).

21. (New) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

(a) obtaining one or more embryonic stem cells;

(b) transfecting said stem cells with a nucleic acid encoding PTX-3;

(c) culturing said stem cells of step (b) in order to become lineage-restricted to dopaminergic neurons; and

(d) engrafting into said patient the cells of step (c).

22. (New) The method of claim 21, wherein step (c) comprises inducing cell division using a growth factor.

23. (New) The method of claim 22, wherein said growth factor is fibroblast growth factor-8 (FGF-8).

24. (New) The method of claim 21, wherein step (c) comprises expanding said

stem cells in the presence of sonic hedgehog (Shh).

25. (New) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

(a) providing dopaminergic neurons derived from recombinant embryonic stem, and

(b) engrafting into said patient said neurons of step (a).

26. (New) The method of claim 25, wherein said stem cells or are transfected with a nucleic acid encoding Nurr-1.

27. (New) The method of claim 25, wherein said stem cells or are transfected with a nucleic acid encoding PTX-3.

28. (New) The method of claim 25, wherein said stem cells are transfected with a nucleic acid encoding Nurr-1 and a nucleic acid encoding PTX-3.

29. (New) The method of claim 25, wherein said recombinant cells are embryonic stem cells or are derived from embryonic stem cells transfected with a nucleic acid encoding Nurr-1 and PTX-3.

30. (New) A method of treating a human patient suffering from Parkinson's disease, said method comprising:

engrafting into the patient a population of cells in which at least 90% the cells are dopaminergic or serotonergic neurons, wherein said cells are derived from isolated embryonic stem cells and are administered as a suspension of 50 to 50,000 cells per microliter in a pharmaceutically acceptable carrier.

31. (New) The method of claim 30, wherein said embryonic stem cells express a recombinant cell fate-inducing gene selected from the group consisting of Nurr-1 and PTX-3.

32. (New) The method of claim 31, wherein said cell fate-inducing gene is expressed under the control of a heterologous promoter.